

CLAIMS

1. An electrolytic nitrogen gas generator comprising:
 - a. a cathode and an anode connected as part of an electrical circuit that may be switched on or off;
 - b. an electrolyte in contact with the anode comprising an active nitrogen compound selected from the group consisting of organic hydrazides, organic hydrazino carboxylates and amino guanidine salts;
 - c. wherein nitrogen gas is generated at the anode from the active nitrogen compound when the electrical circuit is switched on.
2. The electrolytic nitrogen gas generator of claim 1, further comprising a cathode depolariser to suppress hydrogen generation.
3. The electrolytic nitrogen gas generator of claim 1, wherein the electrical circuit comprises a battery.
4. The electrolytic nitrogen gas generator of claim 1, wherein the electrical circuit comprises a resistor.
5. The electrolytic nitrogen gas generator of claim 4, wherein the resistor is a variable resistor.
6. The electrolytic nitrogen gas generator of claim 1, wherein the active nitrogen compound comprises methyl hydrazino-carboxylate.
7. The electrolytic nitrogen gas generator of claim 1, wherein the electrolyte comprises urea.
8. The electrolytic nitrogen gas generator of claim 1, wherein the electrolyte is an ionic compound selected from the group consisting of salts, acids and bases.

9. The electrolytic nitrogen gas generator of claim 8,
2 wherein the ionic compound is selected from the group
consisting of ammonium sulphate, sodium chloride, sulphuric
4 acid.

10. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte is held in an absorbent material.

11. The electrolytic nitrogen gas generator of claim 10,
2 wherein the absorbent material comprises an absorbent solid
selected from the group consisting of sponges, felts and
4 gels.

12. The electrolytic nitrogen gas generator of claim 10,
2 wherein the absorbent material is selected from the group
consisting of cellulose sponges and carbopol gels.

13. The electrolytic nitrogen gas generator of claim 1,
2 wherein the active nitrogen compound comprises oxalic
dihydriazide.

14. The electrolytic nitrogen gas generator of claim 1,
2 wherein the active nitrogen compound comprises
aminoguanidine bicarbonate.

15. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises aqueous sulphuric acid.

16. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises an antifreeze.

17. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises nitroethanol.

18. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises nitromethane.

19. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises nitroguanidine.

20. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises a cupric salt.

21. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises copper sulphate.

22. The electrolytic nitrogen gas generator of claim 1,
2 wherein the anode comprises graphite.

23. The electrolytic nitrogen gas generator of claim 1,
2 wherein the anode comprises graphite fibre impregnated with
a polymer.

24. The electrolytic nitrogen gas generator of claim 1,
2 further comprising an ion permeable membrane separating the
cathode and a catholyte from the anode and the anolyte,
4 wherein the ion permeable membrane electrically couples the
catholyte to the anolyte.

25. The electrolytic nitrogen gas generator of claim 24
2 wherein the ion permeable membrane is selected from the
group consisting of cation selective membranes and anion
4 selective membranes.

26. The electrolytic nitrogen gas generator of claim 1,
2 further comprising a bipolar electrode separating the
cathode and a catholyte from the anode and the anolyte,
4 wherein the catholyte electrically couples the cathode to
the bipolar electrode and the anolyte electrically couples
6 the bipolar electrode to the anode.

27. The electrolytic nitrogen gas generator of claim 26
2 further comprising an oxidant in contact with the cathode.

28. The electrolytic nitrogen gas generator of claim 27
2 wherein the oxidant is selected from the group consisting
of manganese dioxide and a bromate salt.

29. The electrolytic nitrogen gas generator of claim 27
2 wherein the oxidant is sodium bromate.

30. The electrolytic nitrogen gas generator of claim 26
2 further comprising a reductant in contact with the bipolar
electrode.

31. The electrolytic nitrogen gas generator of claim 30
2 wherein the reductant is selected from the group consisting
of zinc powder and aluminium powder.

32. The electrolytic nitrogen gas generator of claim 26
2 wherein the electrolyte further comprises a depolariser for
depolarising the cathode of the bipolar electrode.

33. The electrolytic nitrogen gas generator of claim 32
2 wherein the depolariser comprises a dissolved salt of a
metal and the metal is deposited on the bipolar electrode
4 to depolarise the bipolar electrode when the circuit is
switched on.

34. The electrolytic nitrogen gas generator of claim 32
2 wherein the depolariser comprises a reducible organic
compound selected from the group consisting of
4 nitroethanol, nitromethane, and nitroguanidine.

35. The electrolytic nitrogen gas generator of claim 1
2 further comprising a transducer for capturing the nitrogen
gas generated at the anode and producing mechanical energy
4 therefrom.

36. The electrolytic nitrogen gas generator of claim 35,
2 wherein the transducer is mechanically coupled to a fluid
dispenser so that a fluid is dispensed from the fluid
4 dispenser when nitrogen gas is generated at the anode.

37. A housing for an electrolytic cell comprising an
2 anode, a cathode and an electrolyte biased together in
electrical contact, the electrolyte being contained by a
4 flexible membrane adapted to accommodate compression of the
electrolyte, the housing having an opening to permit
6 passage of gas evolved from the electrolyte during
electrolysis.